

Re. Point V

Reasoned statement with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statements

1. Reference is made to the following documents:

- D1: EP-A-0 473 929 (IBM) 11 March 1992 (1992-03-11)
D2: US-A-3 978 578 (MURPHY JAMES C) 7 September 1976 (1976-09-07)
D3: US-A-5 027 192 (KLOUCEK FRANZ) 25 June 1991 (1991-06-25)
D4: US-A-4 937 707 (ELLIS THERON L ET AL) 26 June 1990 (1990-06-26)

2. The present application does not fulfill the requirements of Article 33(1) PCT because the object of claims 1 and 6 is not new in the sense of Article 33(2) PCT.

- 2.1 Document D1 discloses (the references in brackets relate to Figures 1,2 and to their description from column 4 line 21 to column 5 line 37 in this document):

Arrangement with at least one substrate (15), at least one electrical component (13) arranged on a section of the surface (11) of the substrate (15) with an electrical contact surface (17 in Figure 2) and at least one electrical contact lug (11) with an electrical connecting surface (23) for electrical contacting of the contact surface (17) of the component (13), where the connection surface (23) of the contact lug (11) and the contact surface (17) of the component (13) are connected to each other such that there is a protruding area of contact lug (11), over at least the contact surface (17) of the component (13), where the contact lug (11) features at least one electrically-conductive film (23) and the electrically-conductive film (23) forms the electrical connection surface (23) of the contact lug (11).

For these reasons the arrangement and the method in accordance with the claims 1 and 6 are not new.

- 2.2 For the sake of completeness it is pointed out that claims 1 and 6 are not new according to the disclosure of the document D2. Document D2 discloses (the references in brackets relate to the Figure 3 and to their description from column 3 line 58 to column 4 line 17 in this document):

Method for producing an arrangement with steps:

- a) Provision of a substrate (43) with an electrical component (40) with an electrical contact surface (42) and
- b) Create the electrical contacting by bringing together the contact surface (42) of the component (40) and connection surface (44a, 44b) of the electrically-conductive film of the contact lug (44) such that an area of the electrically-conducting film of the contact lug (44) protrudes beyond at least the contact surface of the component is produced.

3. The dependent claims 2-5 and 7-21 do not contain any features which in combination with the features of any claim to which they relate do not fulfill the PCT in relation to novelty or inventive step. The reasons for this are as follows.

- 3.1 Document D1 discloses (cf. Figure 1) a laminated interconnect (11) with two electrical conductor layers (23, 27) and a insulation layer (25) between the conductor layers (23, 27), such as in claim 2.
- 3.2 As presented in the paragraph 4.1, the features of claim 3 relate to a method for use of the arrangement in accordance with claim 1 or 2, namely to the electrical activation of conductor layers. Since the same electrical activation of the conductor layers (23, 27) of the contact lug (11) can be used in the same way by document D1 (cf. column 5, line 30-37 and column 6 line 5-27 in D1), the object of the claim 3 is not new in the sense of Article 33(2) PCT. It is mentioned that the electrical activation in accordance with claim 3 is disclosed in document D3. D3 (cf. Figure 1 and its description from column 2, line 60 to column 3 line 36) discloses a low-induction terminal (28) with the laminated interconnect in accordance with claim 2, with the conductor layers (1, 3) being used as "feeds" and "drains", namely with opposing current directions J and $-J$, for control current of the semiconductor element, as in claim 3.
- 3.3 As set down in paragraph 4.2, the features of the claim 4 are interpreted as at least two parallel conductor layers. The same features are disclosed in D1 (compare parallel conductor layers 3 and 27).
- 3.4 the use of a power semiconductor chip is a unique implementation of the arrangement of D1. The object of the claim 5 is thus not based on any inventive step.

- 3.5 The contact surface (42) are connected with the component (40) and the connection surface (44a,44b) of the film (44) in D2 (cf. Figure 3), with a conventional connection method (cf. column 4, lines 10-13 in D2), as in claim 7.
- 3.6 The laminated interconnect in D2 features an electrical insulation layer (45) and an electrical conductor layer (44a,44b), as in claim 8.
- 3.7 In accordance with the method of D2, an electrical insulating film (18) is applied to the component and the substrate (cf. Figure 2a) and two windows (22 in the insulation film (18) are created over the contact surface of the component (10) (cf. Figure 2b), as in claim 9.
- 3.8 The method according to claim 10 to apply the insulating film is a known alternative to the method, which is used in D2. The object of the claim 5 is thus not based on any inventive step.
- 3.9 The insulating film applied in D2 (41 in Figure 3) is used as the insulation layer of the laminated interconnect (cf. column 4, lines 13-17 in D2), as in claim 11.
- 3.10 In D2 (Figure.3) after the application of the insulating film (41) electrically-conductive material (44a,44b) is applied to the insulating film, as in claim 12.
- 3.11 The protruding area of the insulating film (41) in D2 (Figure 3) is created at least beyond contact surface (42) of the component (40) as in claim 13.
- 3.12 in D2 an insulating film (18 in Figures 2a,2b: 41 in Figure 3) made of polyimide (cf. column 2, lines 22-24, columns 4, lines 13-17) is used, as in claim 14.
- 3.13 It appears that the range of the film thickness in accordance with claim 15 (25-150 µm) does not produce any significant and unexpected advantage in comparison to the film thickness in D2 (0.5-6 µm) . The object of claim 15 is thus not based on any inventive step. The reasoning then applies correspondingly to claim 17.
- 3.14 in D2 a tempering step is performed as in claim 16 (cf. column 2 lines 32-34).
- 3.15 in D2, to create of the window in the insulating film,

a photo-lithographic process is performed (cf. column 2, line 52 to column 3, line 20), as in claim 19.

The laser ablation, as in claim 18, is a known alternative to a photo-lithographic process. The object of claim 18 is thus not based on any inventive step.

- 3.16 Document D1 discloses (cf. claim 16 in D1) the features of claim 20, namely a conductor layer featuring sublayers of copper and chrome.
- 3.17 Document D4, cited in D1, discloses a laminated interconnect with two conductor layers and one insulation layer. In addition D4 teaches that to produce a multi-layer arrangement, the steps of the method have to be executed a number of times (cf. column 4 lines 4-25). The person skilled in the art, following the instructions of D1 would readily provide the features of D4 in the laminated interconnect of D1. The object of claim 21 is thus not based on any inventive step.
4. The application does not meet the requirements of Article 6 PCT, because claims 3,4,7,12,14 are not clear.
 - 4.1 Some of the features in the device claim 3 relate to a method for using the device, namely the electrical activation of the conductor layers, and not to the definition of the device. The intended restrictions in contradiction to the requirements of Article 6 PCT thus do not emerge clearly from the claim.
 - 4.2 The term "coplanar" used in claim 4 and in the description (cf. Page 16 lines 11-14) could lead to misunderstandings. The conductor layers (31,31') as shown in the Figures 5-8 are arranged above one another, namely on two parallel layers. Therefore the features of claim 4 are interpreted as at least two "parallel" instead of "coplanar" conductor layers.
 - 4.3 The expression "and/or" used in claims 12 and 21 is unclear and leaves the reader uncertain about the meaning of the technical features concerned. The result is that the definition of the object of these claims is not clear (Article 6 PCT).
5. Contrary to the requirements of Rule 5.1 a) ii) PCT neither the pertinent prior art disclosed in the documents D1 and D2 nor these documents are specified in the description.